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SOUTHERN CALIFORNIA MARINE SPORT FISHING FROM PRIVATELY OWNED BOATS: CATCH AND EFFORT FOR JANUARY-MARCH 1982

by

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SOUTHERN CALIFORNIA MARINE SPORT FISHING FROM PRIVATELY OWNED BOATS: CATCH AND EFFORT FOR JANUARY-MARCH 1982 [1/]

by

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ABSTRACT

The catch landed and effort expended by private-boat sport fishermen were studied in southern California between January and March 1982, to determine the impact of one segment of the sport fishery on local marine resources. Fishermen returning from fishing trips were interviewed at launch ramps, hoists, and boat-rental facilities. This report contains quantitative data and statistical estimates of total effort, total catch, catch of preferred species, and length frequencies for those species whose catches are regulated by minimum size limits.

An estimated 155,000 organisms were landed by 52,000 anglers and 2,400 divers. The two major components of the catch were white croaker, *Genyonemus lineatus*, 44,000 landed and Pacific mackerel, *Scomber japonicus*, 23,000 landed. Together these two species made up over a third of the estimated southern California sport catch.

Angler compliance with size limit regulations was generally favorable. Ninety-one percent of all basses, *Paralabrax* spp., examined were of legal size, as were 73% of the California halibut, *Paralichthys californicus*. A 24-inch (fork length) size limit was imposed upon Pacific bonito, *Sarda chiliensis*, as of March 1, 1982; none of the 399 bonito measured in March were of legal size.

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INTRODUCTION

Recreational fishing activity in southern California marine waters affects the abundance of local fish populations and also influences migratory fish populations. To determine the extent of these fishing activities, the Department of Fish and Game studied one segment of the recreational fishery: fishermen using privately owned, trailerable boats.

The major purposes of the study were to estimate effort levels expended by anglers and divers, to estimate the magnitude and species composition of the catch by these fishermen, and to assess the degree of sport fishermen's compliance with size limit regulations.

The information generated by this study provides: 1) a baseline study for future comparison of catch and effort trends; 2) evidence for adding, deleting, or changing fishing regulations; 3) an indication of fishing pressure on various species; and 4) supportive material for other agencies to use when assessing proposed actions which could affect southern California's living marine resources. The results of the study focus attention on areas in which management may be necessary.

OPERATIONS

Sampling Plan

The sampling plan consisted of a program of random field sampling at selected launch ramps, hoists, and boat-rental facilities in Santa Barbara, Ventura, Los Angeles, Orange, and San Diego counties. Sampling was conducted on all weekends and holidays, and on randomly chosen weekdays in accordance with available manpower. Field samplers remained at the sample

locations from 1000 hrs to 1800 hrs [3/], and an attempt was made to interview all returning anglers and divers. Information on length of angling trip, number of hours spent diving, number of fishing poles used, and number of people angling or diving was gathered along with the identification and enumeration of all fishes, mollusks, and crustaceans in possession. Instances of fishing parties which did not keep their catch were noted, but no attempt was made to identify or quantify those fishes returned to the water. All species with minimum size requirements were measured for length-frequency analysis.

Sampling Locations

Five counties are covered in the survey: Santa Barbara, Ventura, Los Angeles, Orange, and San Diego. Three sampling sites are located in Santa Barbara County, three sites in Ventura County, seven sites in Los Angeles County, five sites in Orange County, and seven sites in San Diego County.

Statistical Analysis

Data were averaged on a daily basis for each county, then expanded to estimate the total catch or effort for each county, each month. Catch estimates were made for each species which had a legal minimum size limit, for the 20 most commonly landed species, for the *Sebastes* genus, and for the total number of fishes landed. Estimates were calculated separately for weekends and weekdays.

3/ During January and February, the sampling day was curtailed in quarter hour increments so that field samplers were not forced to work after sunset: the sampling day ended at 1715 hrs in January and at 1730 hrs in February. In San Diego County during March, due to sampling difficulties, only those field interviews obtained between 1000 hrs and 1730 hrs were used in analyzing catch and effort data. The March catch and effort estimates for San Diego County were based on this abbreviated sampling day.

RESULTS AND DISCUSSION

Data Samples

During the January 1 - March 31, 1982 quarter, 19 launch ramps, 5 boat hoists, and 4 boat-rental locations were sampled 347 times. Samplers interviewed 13,737 anglers and 696 divers who spent 87,172 angler-trip-hours [4/] and 875 diver-hours [5/] in southern California coastal waters. Samplers examined 34,935 fishes, mollusks, and crustaceans of 124 species in the angler catch, along with 1,910 filleted fishes and 560 fishes which could not be identified to species due to time constraints or the incomplete condition in which the fish were landed (Tables 1 and 2). In the sampled diver catch, 2,534 organisms of 54 species plus 27 unidentified fish, 17 unidentified filleted fishes, and 55 unidentified invertebrates were examined.

Effort

An estimated 52,000 angler days were expended by southern California sport fishermen between January 1 and March 31, 1982. This level of angling effort represented a 15% decline from the last (fall, 1981) quarter. Stormy winter weather precluded some potential angling activity, and part of the decline in effort could be directly attributed to the seasonal scarcity of such preferred game species as yellowtail, *Seriola lalandi*; California barracuda, *Sphyraena argentea*; and California halibut, *Paralichthys californicus*. The distribution of angling effort among the five southern California counties closely followed the pattern set in previous quarters: Los Angeles County had more than twice the angler effort of any of the other counties (46%). San Diego County had 22%; Orange County, 17%; and Santa Barbara/Ventura counties, a 15% share (Tables 3 and 4).

4/ The unit of angler effort is one hour of trip-time per angler. Adjustments are made for those using more than one fishing pole concurrently.

5/ The unit of dive effort is one hour spent underwater.

Diving effort exhibited a sharp decrease from the fall 1981 quarter. An estimated 3,000 diver hours were expended this quarter; this was one-third the number of diver hours expended in the fall. Adverse weather and sea conditions that made diving difficult or hazardous, plus the closure of the abalone, *Haliotis* spp., season during most of the quarter, probably accounted for this drop in effort. Diving effort was fairly equally distributed among the five counties and ranged between 23% and 27% (Tables 5 and 6).

Catch

An estimated 155,000 fishes and other organisms were landed by anglers in southern California, and an estimated 9,400 organisms were landed by divers. Forty-three species of fishes and invertebrates made up 95% of the combined angler/diver catch. The remaining 5% of the combined catch was composed of 92 species.

Two species, white croaker, *Genyonemus lineatus*, and Pacific mackerel, *Scomber japonicus*, made up 40% of the estimated angler catch. Twenty-five percent of the catch was composed of various scorpaenids, of which bocaccio, *Sebastes paucispinis*; sculpin, *Scorpaena guttata*; greenspotted rockfish, *Sebastes chlorostictus*; blue rockfish, *S. mystinus*; and olive rockfish, *S. serranoides*, constituted half of the estimated landings. Among the preferred game fishes present in the catch, the three *Paralabrax* basses were the only species represented in significant quantities (8%). Other preferred game species, such as California halibut (2%), barracuda (0.1%) and yellowtail (0.2%), were only sporadically available to most anglers.

Two species dominated the diver catch: rock scallop, *Hinnites multirugosus*, 3,000 landed; and California sheephead, *Semicossyphus pulcher*, 1,6000 landed, made up half of the estimated catch. Divers also landed an estimated 1,000

spiny lobster, *Panulirus interruptus*; and 830 abalone. Both these totals represented a sharp decline from the previous quarters' landings of lobster and abalone. Eighty percent of the abalone landed were red abalone, *H. rufescens*.

Variation by County

An estimated 40,000 fishes were landed by anglers in Santa Barbara and Ventura counties. This represented a fifth of the total estimated southern California landings. Over 30% of these fishes were rockfish, with copper rockfish, *Sebastes caurinus*; blue rockfish; and olive rockfish being the three principal rockfish species landed. White croaker, comprising nearly 50% of the catch, was the most abundant species in the Santa Barbara/Ventura counties catch. This species, though not highly regarded by most anglers for food or sport, currently has no bag limit and is highly vulnerable to a wide variety of hook-and-line angling techniques. These two factors may account for the dominant position of white croaker in the catch here and elsewhere in southern California. Pacific mackerel, though showing a 75% decline in landings from the previous quarter, represented 5% of the current catch and ranked among the counties' top ten species (Table 7). A little more than 340 king salmon, *Onchorynchus tshawytscha*, were landed in Santa Barbara/Ventura counties, accounting for the entire estimated southern California salmon sport catch. Although a relatively minor constituent of the overall catch, the king salmon "run" was the first of any consequence in 6 years and generated considerable angler interest and effort. Over half the diver catch of 2,100 organisms was composed of two species: rock scallop (36%), and spiny lobster (23%). The sport abalone season was closed during two-thirds of this quarter, and less than 10% of the diver catch was composed of abalone.

Los Angeles County anglers landed an estimated 75,000 fishes, representing over half the southern California angler catch. A third of this total was composed of white croaker, the leading catch species. The county's landings of Pacific mackerel and bonito, *Sarda chiliensis*, were also substantial, and together they represented a quarter of the Los Angeles County catch. Rockfishes and sculpin made up another quarter of the Los Angeles County catch; the leading rockfish species were bocaccio and olive rockfish. These two species and sculpin made up half of the scorpaenid catch. More California halibut (2,000) were landed in Los Angeles County than in the other four counties combined; 80% of the catch of this preferred game species was landed in Los Angeles County. Kelp bass, *Paralabrax clathratus*; and barred sand bass, *P. nebulifer*, were two additional preferred game species well represented in the catch. The estimated catch of 900 kelp bass and 2,000 barred sand bass made up 4% of the Los Angeles County landings. Divers in the county landed 2,700 organisms, one third of the southern California diver catch. With most of the Los Angeles County coastline closed to abalone diving, abalone landings were miniscule, less than 1% of the catch. Los Angeles County sport divers instead concentrated their efforts on securing quantities of rock scallop, spiny lobster, and California sheephead. Two-thirds of the diver catch was composed of these species.

Orange County had the lowest estimated angler catch total: 14,000 fishes, or just 10% of the southern California angler catch. A third of this total was composed of white croaker and Pacific mackerel, both landed in about equal quantities. The diver catch in Orange County was dominated by rock scallop, which represented half of the estimated 2,500 organisms landed there. The second ranked diver-catch species was California sheephead, less than 450 of which were taken.

San Diego County anglers accounted for nearly 20% of the southern California sport catch. Of 27,000 fishes landed, 8,000, or nearly 30%, were Pacific mackerel, the leading catch species. Another third of the catch was composed of various rockfishes, with bocaccio comprising the largest (19%) component. Among the preferred game species, the three *Paralabrax* basses accounted for 20% of the catch. Divers in San Diego County landed over 2,000 organisms, including 600 abalone; this represented 80% of the total southern California abalone take. Ninety percent of these abalone were red abalone. Apparently concentrating their effort on abalone, divers landed fewer than 100 rock scallop, the lowest total among the southern California counties, and equivalent to 3% of the rock scallop catch.

Length Frequencies

The length-frequency data (Table 8, Figures 1-7) show that the size limit compliance for the three *Paralabrax* bass species averaged 91%, a 3% improvement over the three last quarters' (April - December, 1981) compliance rate. Size limit compliance for California halibut (73%) rose 8% from the previous fall quarter. A minimum size limit of 61 cm (24 in.) fork length, was implemented for Pacific bonito on March 1 of this year. A tolerance of two or five undersized bonito (depending on the time of year) per angler was also implemented in conjunction with the new size limit. Of the 399 bonito measured in March, all were well below the minimum size limit. A modal length near 40.0 cm is displayed by the bonito length frequency histogram (Figure 4). This modal length corresponding to bonito slightly less than 1-yr old, indicates that most of the March bonito catch was composed of 1981 year-class fish. A high percentage (98%) of the spiny lobster examined met legal size requirements during the last half of the 1981-82 season. This compared favorably to the compliance rate of 79% for the January - March portion of the

1980-1981 lobster season. Size limit compliance for spiny lobster over several full seasons beginning in 1975 has averaged 95%. Red abalone was the only abalone species landed in significant quantity this quarter, and the 88% adherence to size limit requirements represented a 2% drop from the last quarter, and an 8% drop from the 96% size limit compliance rate noted for the same period (January - March) last year.

TABLE 1. List of Species Sampled from Southern California Private Boats; January through March 1982.

Scientific name	Common name	No. sampled
	Fishes	
Alopias vulpinus	common thresher	22
Amphistichus argenteus	barred surfperch	76
Anisotremus davidsonii	sargo	12
Anoplopoma fimbria	sablefish	11
Atherinops affinis	topsmelt	5
Atherinopsis californiensis	jacksmelt	220
Atractoscion nobilis	white seabass	29
Balistes polylepis	finescale triggerfish	2
Caulolatilus princeps	ocean whitefish	293
Cheilotrema saturnum	black croaker	17
Chromis punctipinnis	blacksmith	11
Citharichthys sordidus	Pacific sanddab	646
C. stigmaeus	speckled sanddab	1
C. xanthostigma	longfin sanddab	3
Damalichthys vacca	pile surfperch	70
Embiotoca jacksoni	black surfperch	677
E. lateralis	striped surfperch	21
Eopsetta jordani	petrale sole	5
Galeorhinus zyopterus	soupfin shark	2
Genyonemus lineatus	white croaker	9,061
Girella nigricans	opaleye	522
Glyptocephalus zachirus	rex sole	6
Gymnothorax mordax	California moray	1
Halichoeres semicinctus	rock wrasse	24
Hermosilla azurea	zebraperch	1
Heterodontus francisci	horn shark	1
Heterostichus rostratus	giant kelpfish	10
Hexagrammos decagrammus	kelp greenling	4
Hippoglossina stomata	bigmouth sole	3
Hydrolagus colliei	ratfish	1
Hyperprosopon argenteum	walleye surfperch	89
Hypsopsetta guttulata	diamond turbot	23
Hypsurus caryi	rainbow surfperch	17
Hypsypops rubicundus	garibaldi	1
Isurus oxyrinchus	bonito shark	1
Lepidopsetta bilineata	rock sole	3
Medialuna californiensis	halfmoon	889
Menticirrhus undulatus	California corbina	3
Merluccius productus	Pacific hake	13
Mola mola	common mola	3
Mustelus californicus	gray smoothhound	44
M. henlei	brown smoothhound	15
Myliobatis californica	bat ray	7
Oncorhynchus kitsutch	silver salmon	1
O. tshawytscha	king salmon	61
Ophiodon elongatus	lingcod	60

Table 1 - cont'd.

Scientific name	Common name	No. sampled
Oxyjulis californica	senorita	131
Oxylebius pictus	painted greenling	1
Paralabrax clathratus	kelp bass	772
P. maculatofasciatus	spotted sand bass	303
P. nebulifer	barred sand bass	1,732
Paralichthys californicus	California halibut	631
Phanerodon furcatus	white surfperch	89
Platyrhinoidis triseriata	thornback	9
Pleuronichthys coenosus	C-O turbot	1
Porichthys myriaster	specklefin midshipman	5
P. notatus	plainfin midshipman	1
Prionace glauca	blue shark	60
Raja binoculata	big skate	4
R. inornata	California skate	3
Rhacochilus toxotes	rubberlip surfperch	75
Rhinobatos productus	shovelnose guitarfish	34
Roccus saxatilis	striped bass	1
Roncador stearnsii	spotfin croaker	4
Sarda chiliensis	Pacific bonito	1,879
Scomber japonicus	Pacific mackerel	5,420
Scorpaena guttata	sculpin	1,204
Scorpaenichthys marmoratus	cabezon	116
Sebastes atrovirens	kelp rockfish	66
S. auriculatus	brown rockfish	299
S. carnatus	gopher rockfish	49
S. caurinus	copper rockfish	467
S. chlorostictus	greenspotted rockfish	805
S. chrysomelas	black and yellow rockfish	9
S. constellatus	starry rockfish	255
S. dallii	calico rockfish	16
S. diploproa	splitnose rockfish	18
S. elongatus	greenstriped rockfish	255
S. ensifer	swordspine rockfish	28
S. entomelas	widow rockfish	113
S. eos	pink rockfish	19
S. flavidus	yellowtail rockfish	19
S. gilli	bronzespotted rockfish	7
S. goodei	chilipepper	420
S. hopkinsi	squarespot rockfish	45
S. levis	cowcod	58
S. macdonaldi	Mexican rockfish	4
S. miniatus	vermilion rockfish	350
S. mystinus	blue rockfish	627
S. ovalis	speckled rockfish	331
S. paucispinus	bocaccio	1,861
S. phillipsi	chameleon rockfish	1
S. pinniger	canary rockfish	46
S. rastrelliger	grass rockfish	154
S. rosaceus	rosy rockfish	156
S. rosenblatti	greenblotched rockfish	64

Table 1 - cont'd.

Scientific name	Common name	No. sampled
Sebastes rubrivinctus	flag rockfish	257
S. rufus	bank rockfish	39
S. saxicola	stripetail rockfish	8
S. semicinctus	halfbanded rockfish	6
S. serranoides	olive rockfish	884
S. serriceps	treefish	112
S. umbrosus	honeycomb rockfish	67
Sebastolobus altivelis	longspine thornyhead	3
Semicossyphus pulcher	California sheephead	766
Seriola lalandi	yellowtail	89
Seriphus politus	queenfish	236
Sphyraena argentea	California barracuda	42
Squalus acanthias	spiny dogfish	158
Squatina californica	Pacific angel shark	1
Stereolepis gigas	giant sea bass	9
Strongylura exilis	California needlefish	1
Synodus lucioceps	California lizardfish	60
Torpedo californica	Pacific electric ray	1
Trachurus symmetricus	jack mackerel	124
Triakis semifasciata	leopard shark	1
Umbrina roncador	yellowfin croaker	112
Xystreurys liolepis	fantail sole	3
-	unidentified fish	137
-	unidentified filleted fish	721
Sebastes spp.	unidentified rockfish	436
" "	unidentified rockfish fillets	1,206

Mollusks and Crustaceans

Cancer antennarius	rock crab	17
C. anthonyi	yellow crab	5
C. productus	red crab	6
Cypraea spadicea	chestnut cowry	22
Haliotis corrugata	pink abalone	11
H. cracherodii	black abalone	18
H. fulgens	green abalone	10
H. rufescens	red abalone	157
Hinnites multirugosus	rock scallop	906
Kelletia kelletii	Kellet's whelk	12
Loxorhynchus grandis	sheep crab	3
Panulirus interruptus	California spiny lobster	292
Pugettia gracilis	graceful kelp crab	1
Mytilus spp.	mussel	950
Octopus spp.	unidentified octopus	5
Brachyura	unidentified crab	15
Mollusca	unidentified mollusk	40

Table 1 - cont'd.

Scientific name	Common name	No. sampled
	Echinoderms and Coelenterates	
Dendraster excentricus	sand dollar	1
Strongylocentrotus franciscanus	giant red urchin	63
S. purpuratus	purple urchin	4
Pisaster spp.	sea star	14
Holothuroidea	sea cucumber	2
Coelenterata	unidentified coelenterate	1

TABLE 2. Most Commonly Landed Species; January through March 1982.

Scientific name	Common name	No. sampled
	Fishes	
Genyonemus lineatus	white croaker	9,061
Scomber japonicus	Pacific mackerel	5,420
Sarda chiliensis	Pacific bonito	1,879
Sebastes paucispinis	bocaccio	1,861
Paralabrax nebulifer	barred sand bass	1,732
Scorpaena guttata	sculpin	1,204
Medialuna californiensis	halfmoon	889
Sebastes serranoides	olive rockfish	884
S. chlorostictus	greenspotted rockfish	805
Paralabrax clathratus	kelp bass	772
Semicossyphus pulcher	California sheephead	766
Embiotoca jacksoni	black surfperch	677
Citharichthys sordidus	Pacific sanddab	646
Paralichthys californicus	California halibut	631
Sebastes mystinus	blue rockfish	627
Girella nigricans	opaleye	522
Sebastes caurinus	copper rockfish	467
S. goodei	chilipepper	420
S. miniatus	vermilion rockfish	350
S. ovalis	speckled rockfish	331
Paralabrax maculatofasciatus	spotted sand bass	303
Sebastes auriculatus	brown rockfish	299
Caulolatilus princeps	ocean whitefish	293
Sebastes rubrivinctus	flag rockfish	257
S. constellatus	starry rockfish	255
S. elongatus	greenstriped rockfish	255
Seriphus politus	queenfish	236
Atherinopsis californiensis	jacksmelt	220
Squalus acanthias	spiny dogfish	158
Sebastes rosaceus	rosy rockfish	156
S. rastrelliger	grass rockfish	154
Oxyjulis californica	senorita	131
Trachurus symmetricus	jack mackerel	124
Scorpaenichthys marmoratus	cabezon	116
Sebastes entomelas	widow rockfish	113
S. serriceps	treefish	113
	Mollusks and Crustaceans	
Hinnites multirugosus	rock scallop	906
Panulirus interruptus	California spiny lobster	292
Haliotis rufescens	red abalone	157

TABLE 3. Catch and Effort Estimates for Anglers; January through March 1982.

	Santa Barbara/ Ventura Counties	Los Angeles County	Orange County	San Diego County	Total
Angler parties					
weekend	2,043	7,147	2,835	3,460	15,485
weekday	1,090	2,163	891	1,447	5,591
total	3,133	9,310	3,726	4,907	21,076
Angler days					
weekend	5,502	18,881	7,090	8,503	39,976
weekday	2,491	5,026	1,849	2,946	12,312
total	7,993	23,907	8,939	11,449	52,288
Angler-trip-hours					
weekend	34,829	120,047	44,694	54,860	254,430
weekday	15,620	30,051	10,375	18,474	74,520
total	50,449	150,098	55,069	73,334	328,950
Total fishes landed					
weekend	18,426	60,413	10,912	19,254	109,005
weekday	21,260	14,266	3,268	7,408	46,202
total	39,686	74,679	14,180	26,662	155,207
No. rockfishes landed					
weekend	10,173	13,546	2,442	5,681	31,842
weekday	3,327	2,032	673	747	6,779
total	13,500	15,578	3,115	6,428	38,621
Atractoscion nobilis (white seabass)	6	65	29	8	108
Caulolatilus princeps (ocean whitefish)	267	404	104	255	1,030
Citharichthys sordidus (Pacific sanddab)	543	746	195	1,241	2,725
Embiotoca jacksoni (black surfperch)	75	2,124	131	35	2,365
Genyonemus lineatus (white croaker)	19,707	20,821	2,312	766	43,606
Girella nigricans (opaleye)	191	1,347	159	79	1,776

Table 3 - cont'd.

	Santa Barbara/ Ventura Counties	Los Angeles County	Orange County	San Diego County	Total
Medialuna californiensis (halfmoon)	18	2,425	409	282	3,134
Oncorhynchus tshawytscha (king salmon)	339	0	0	0	339
Ophiodon elongatus (lingcod)	158	15	5	19	197
Paralabrax clathratus (kelp bass)	825	956	466	452	2,699
P. maculatofasciatus (spotted sand bass)	0	16	371	1,669	2,056
P. nebulifer (barred sand bass)	290	2,137	1,264	3,688	7,379
Paralichthys californicus (California halibut)	156	2,057	127	148	2,488
Sarda chiliensis (Pacific bonito)	269	7,872	82	62	8,285
Scomber japonicus (Pacific mackerel)	1,886	11,027	2,132	8,208	23,253
Scorpaena guttata (sculpin)	209	3,035	264	751	4,259
Sebastes atrovirens (kelp rockfish)	175	11	9	43	238
S. auriculatus (brown rockfish)	1,011	128	53	120	1,312
S. caurinus (copper rockfish)	1,743	150	21	30	1,944
S. chlorostictus (greenspotted rockfish)	1,097	861	170	751	2,879
S. goodei (chilipepper)	172	789	320	87	1,368
S. miniatus (vermilion rockfish)	628	192	21	433	1,274

Table 3 - cont'd.

	Santa Barbara/ Ventura Counties	Los Angeles County	Orange County	San Diego County	Total
Sebastes mystinus (blue rockfish)	1,642	533	8	268	2,451
S. paucispinus (bocaccio)	699	4,154	333	1,203	6,389
S. rastrelliger (grass rockfish)	381	119	10	19	529
S. serranoides (olive rockfish)	1,399	1,426	80	465	3,370
Semicossyphus pulcher (California sheephead)	105	253	401	297	1,056
Seriola lalandi (yellowtail)	0	314	0	0	314
Seriphus politus (queenfish)	0	833	91	4	928
Sphyraena argentea (California barracuda)	10	161	14	0	185
Thunnus alalunga (albacore)	0	0	0	0	0
Trachurus symmetricus (jack mackerel)	82	331	41	81	535

TABLE 4. Standard Error of the Estimates for Anglers; January through March 1982.

	Santa Barbara/ Ventura Counties	Los Angeles County	Orange County	San Diego County	Total
Angler parties	494	574	263	593	998
Angler days	1,159	1,440	617	1,489	2,452
Angler-trip-hours	8,121	9,953	3,677	9,854	16,602
Total fishes landed	11,629	4,877	1,834	4,511	13,518
No. rockfishes landed	1,742	1,641	711	1,034	2,702
albacore	0	0	0	0	0
barred sand bass	51	246	205	937	991
black surfperch	24	364	43	16	368
blue rockfish	315	136	4	66	350
bocaccio	149	636	89	263	710
brown rockfish	420	35	25	51	425
California barracuda	10	35	5	0	37
California halibut	47	449	24	30	453
California sheephead	34	38	84	101	140
chilipepper	72	246	76	35	269
copper rockfish	331	36	5	12	333
grass rockfish	110	29	4	11	114
greenspotted rockfish	268	150	59	157	350
halfmoon	8	403	128	175	457
jack mackerel	52	99	23	41	121
kelp bass	189	147	92	101	276
kelp rockfish	88	7	3	19	90
king salmon	147	0	0	0	147
lingcod	36	6	3	7	37
ocean whitefish	75	73	40	106	154
olive rockfish	342	269	20	93	445
opaleye	80	304	71	41	325
Pacific bonito	85	1,131	25	22	1,135
Pacific mackerel	509	1,245	381	2,268	2,664
Pacific sanddab	143	232	69	465	544
queenfish	0	290	28	3	292
sculpin	53	387	36	181	432
spotted sand bass	0	6	79	515	521
vermilion rockfish	132	36	9	96	168
white croaker	11,375	3,669	676	168	11,973
white seabass	3	23	14	5	28
yellowtail	0	152	0	0	152

TABLE 5. Catch and Effort Estimates for Divers; January through March 1982.

	Santa Barbara/ Ventura Counties	Los Angeles County	Orange County	San Diego County	Total
Diver parties					
weekend	189	294	182	259	924
weekday	45	13	61	37	156
total	234	307	243	296	1,080
Diver days					
weekend	420	645	418	641	2,124
weekday	102	13	125	74	314
total	522	658	543	715	2,438
Diver-hours					
weekend	631	777	522	727	2,657
weekday	86	13	157	74	330
total	717	790	679	801	2,987
No. organisms landed					
weekend	1,587	2,340	2,112	1,634	7,673
weekday	517	319	389	496	1,721
total	2,104	2,659	2,501	2,130	9,394
Haliotis corrugata (pink abalone)	3	0	16	15	34
H. cracherodii (black abalone)	45	0	0	0	45
H. fulgens (green abalone)	0	0	8	28	36
H. rufescens (red abalone)	109	4	0	598	711
Hinnites multirugosus (rock scallop)	759	892	1,310	92	3,053
Panulirus interruptus (California spiny lobster)	513	370	23	93	999
Paralabrax clathratus (kelp bass)	53	41	31	114	239
Semicossyphus pulcher (California sheephead)	190	392	428	615	1,625

TABLE 6. Standard Error of the Estimates for Divers; January through March 1982.

	Santa Barbara/ Ventura Counties	Los Angeles County	Orange County	San Diego County	Total
Diver parties	37	53	36	72	103
Diver days	87	117	87	155	230
Diver-hours	118	154	115	196	299
No. organisms landed	390	491	499	653	1,034
black abalone	37	0	0	0	37
California sheephead	66	106	110	208	267
California spiny lobster	119	84	7	51	155
green abalone	0	0	5	20	21
kelp bass	23	24	9	33	48
pink abalone	2	0	12	9	15
red abalone	77	3	0	240	252
rock scallop	248	177	270	50	410

TABLE 7. Ten Most Commonly Landed Species in Each County; January through March 1982.

County	Rank	Scientific name	Common name
Santa Barbara/ Ventura	1.	*Genyonemus lineatus*	white croaker
	2.	*Sebastes mystinus*	blue rockfish
	3.	*S. caurinus*	copper rockfish
	4.	*S. serranoides*	olive rockfish
	5.	*Scomber japonicus*	Pacific mackerel
	6.	*Sebastes chlorostictus*	greenspotted rockfish
	7.	*Paralabrax clathratus*	kelp bass
	8.	*Sebastes paucispinis*	bocaccio
	9.	*S. auriculatus*	brown rockfish
	10.	*S. miniatus*	vermilion rockfish
Los Angeles	1.	*Genyonemus lineatus*	white croaker
	2.	*Scomber japonicus*	Pacific mackerel
	3.	*Sarda chiliensis*	Pacific bonito
	4.	*Sebastes paucispinis*	bocaccio
	5.	*Scorpaena guttata*	sculpin
	6.	*Medialuna californiensis*	halfmoon
	7.	*Paralabrax nebulifer*	barred sand bass
	8.	*Embiotoca jacksoni*	black surfperch
	9.	*Paralichthys californicus*	California halibut
	10.	*Sebastes serranoides*	olive rockfish
Orange	1.	*Genyonemus lineatus*	white croaker
	2.	*Scomber japonicus*	Pacific mackerel
	3.	*Hinnites multirugosus*	rock scallop
	4.	*Paralabrax nebulifer*	barred sand bass
	5.	*Semicossyphus pulcher*	California sheephead
	6.	*Medialuna californiensis*	halfmoon
	7.	*Paralabrax clathratus*	kelp bass
	8.	*Sebastes paucispinis*	bocaccio
	9.	*S. goodei*	chilipepper
	10.	*Paralabrax maculatofasciatus*	spotted sand bass
San Diego	1.	*Scomber japonicus*	Pacific mackerel
	2.	*Paralabrax nebulifer*	barred sand bass
	3.	*Sebastes paucispinis*	bocaccio
	4.	*Citharichthys sordidus*	Pacific sanddab
	5.	*Semicossyphus pulcher*	California sheephead
	6.	*Genyonemus lineatus*	white croaker
	7.	*Paralabrax maculatofasciatus*	spotted sand bass
	8.	*Scorpaena guttata*	sculpin
	9.	*Sebastes Chlorostictus*	greenspotted rockfish
	10.	*S. serranoides*	olive rockfish

TABLE 8. Occurrence of Sublegal-Size Fishes in Examined Catches; January through March 1982.

Scientific name	Common name	No. examined	% legal
	Fishes		
Paralabrax clathratus	kelp bass	554	88
P. maculatofasciatus	spotted sand bass	198	92
P. nebulifer	barred sand bass	1,248	92
Paralichthys californicus	California halibut	398	73
Sarda chiliensis	Pacific bonito	399	0*
	Mollusks and Crustaceans		
Haliotis rufescens	red abalone	101	88
Panulirus interruptus	California spiny lobster	197	98

*Pacific bonito length frequency catch data was analyzed for March only, when a new 61 cm (24 in.) fork length, minimum size limit first went into effect. Possession of two bonito less than the minimum size limit per angler also was in effect beginning March 1.

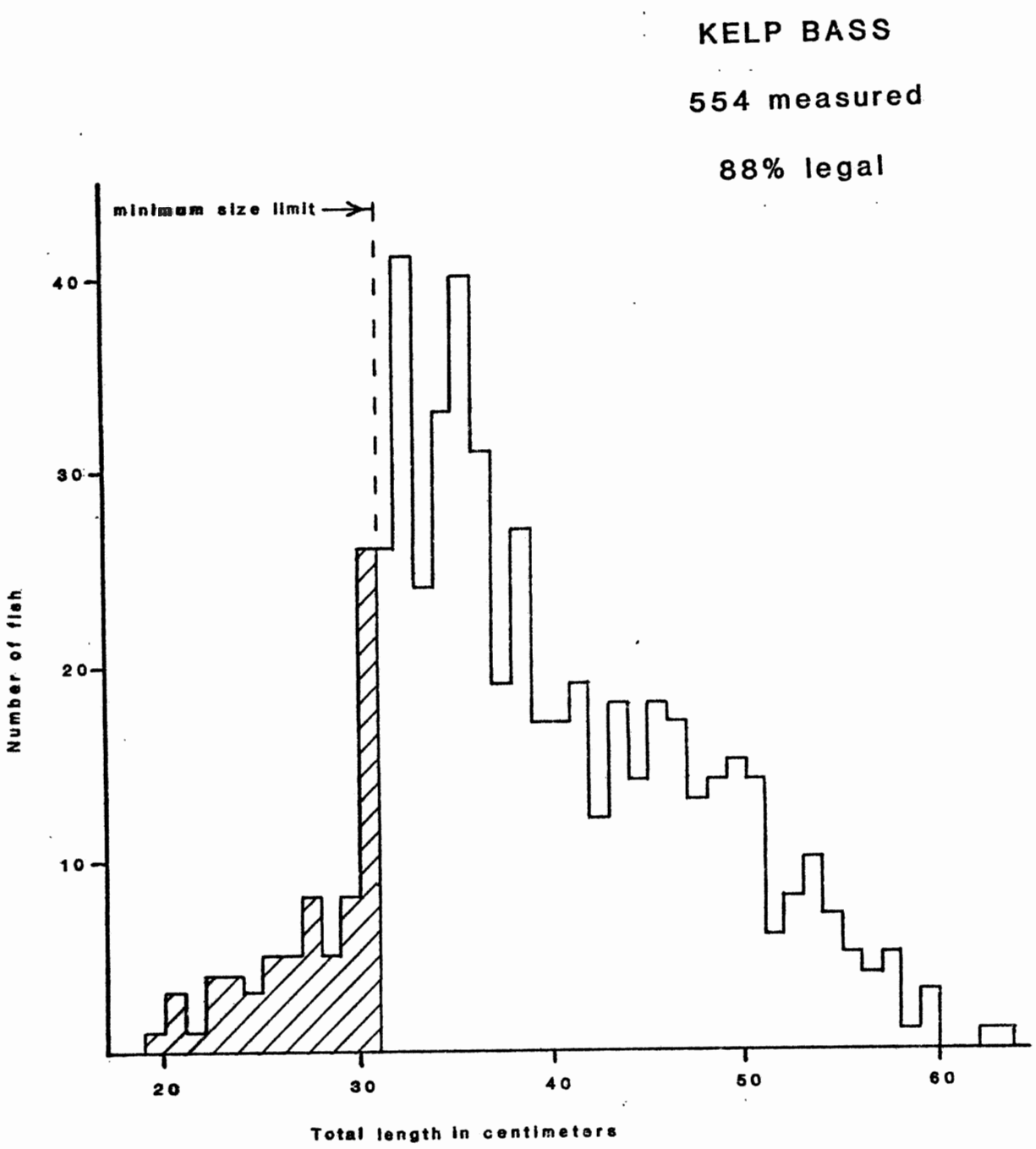

Figure 1. Length frequency of kelp bass.

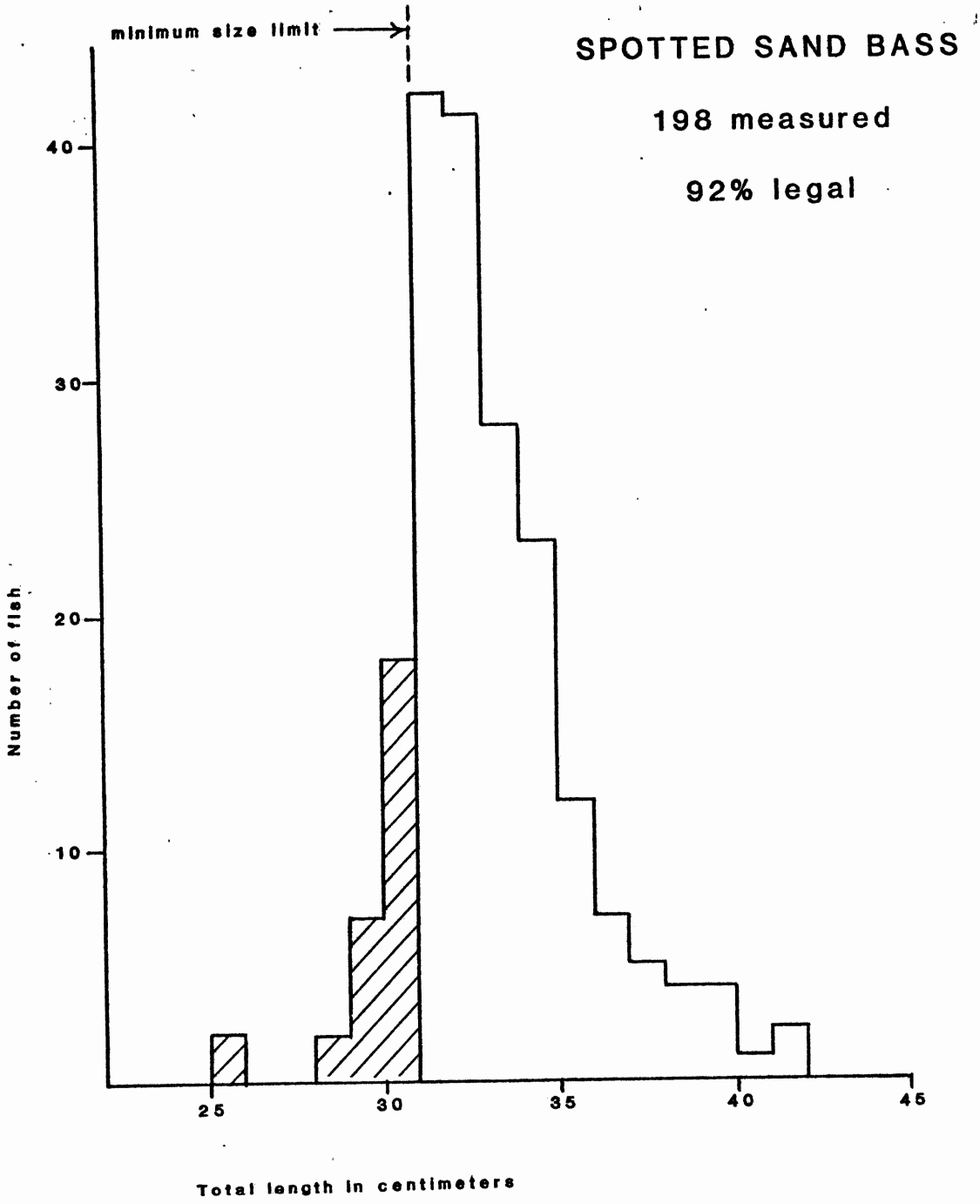

Figure 2. Length frequency of spotted sand bass.

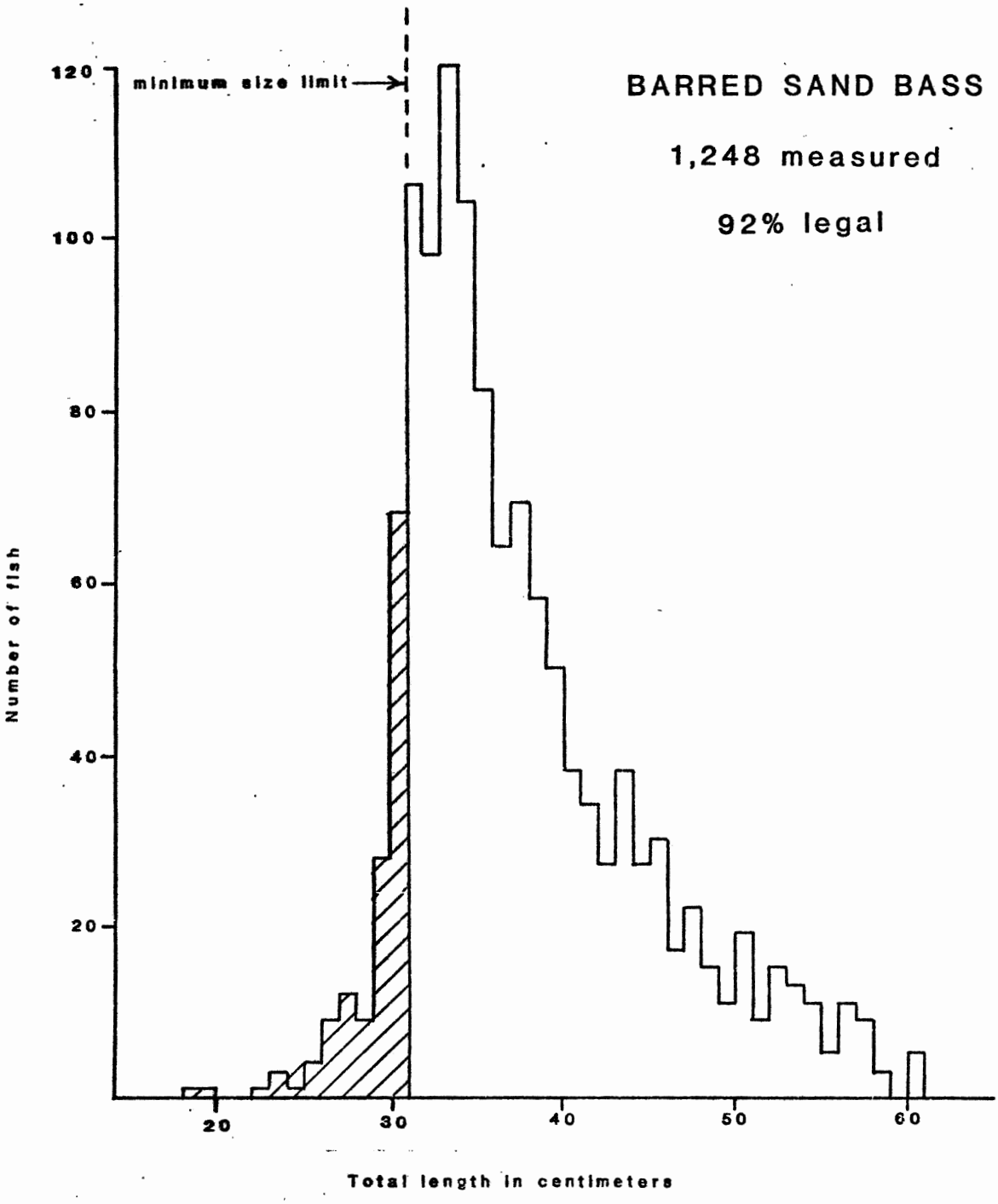

Figure 3. Length frequency of barred sand bass.

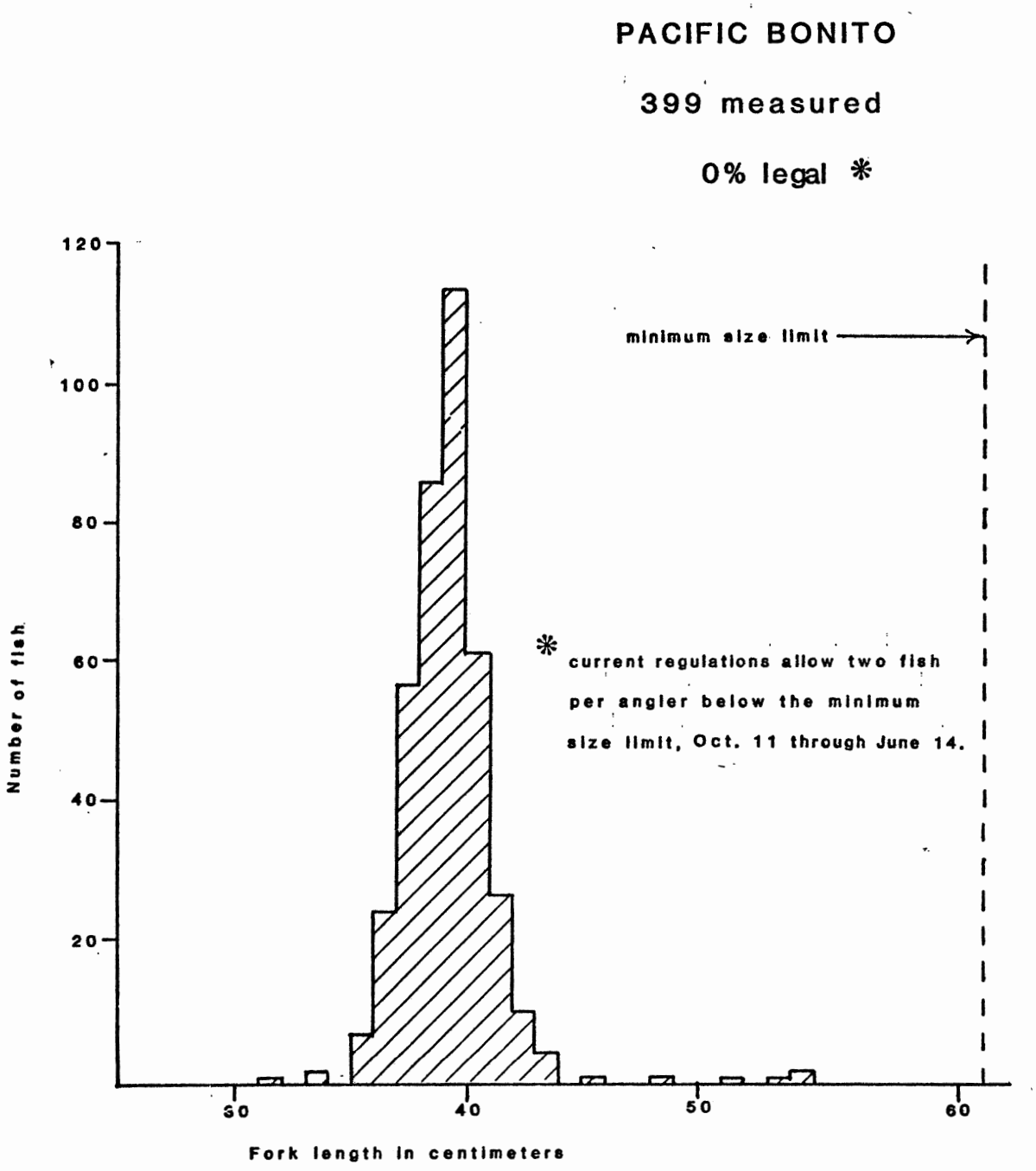

Figure 4. Length frequency of Pacific bonito for March.

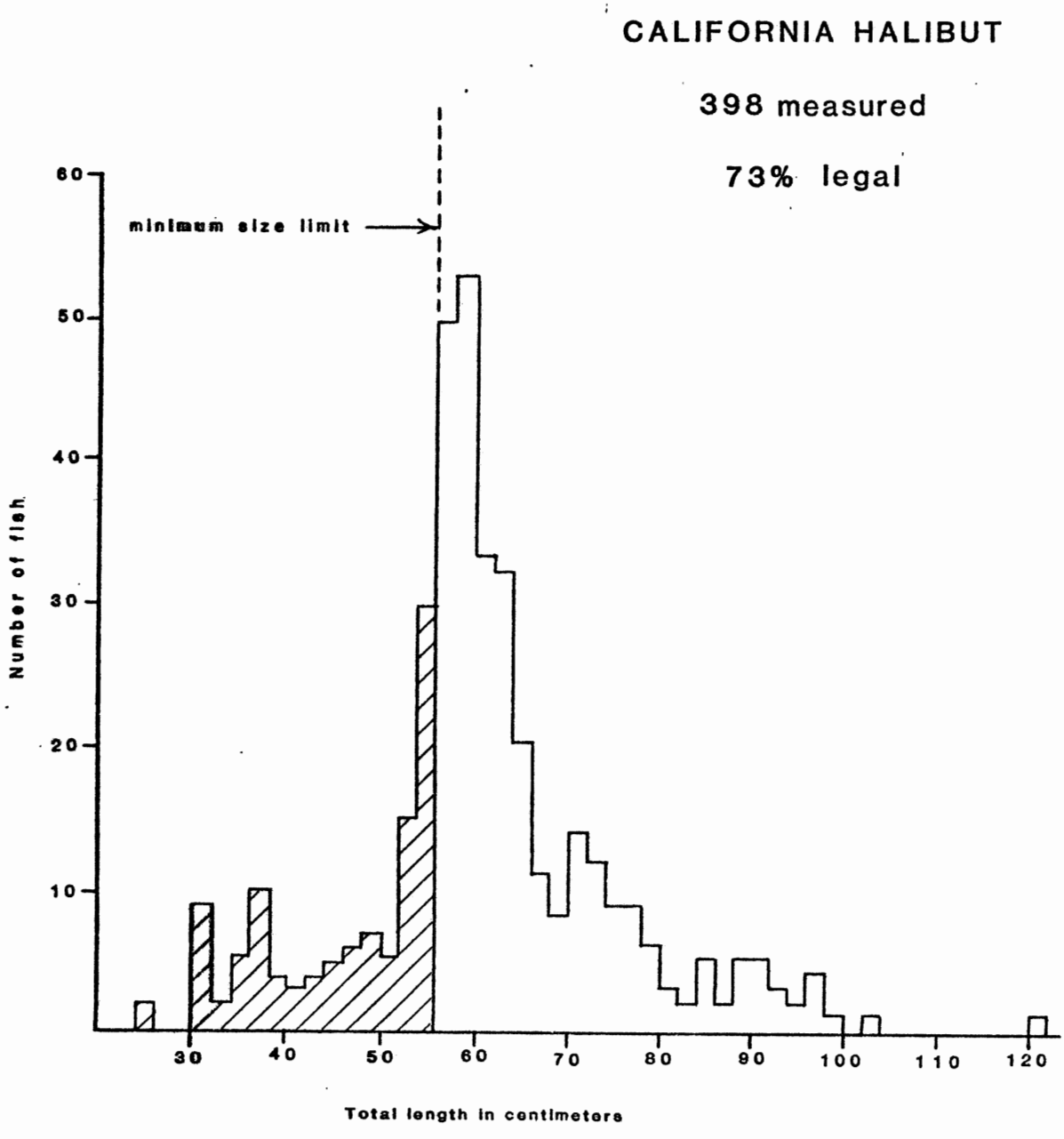

Figure 5. Length frequency of California halibut.

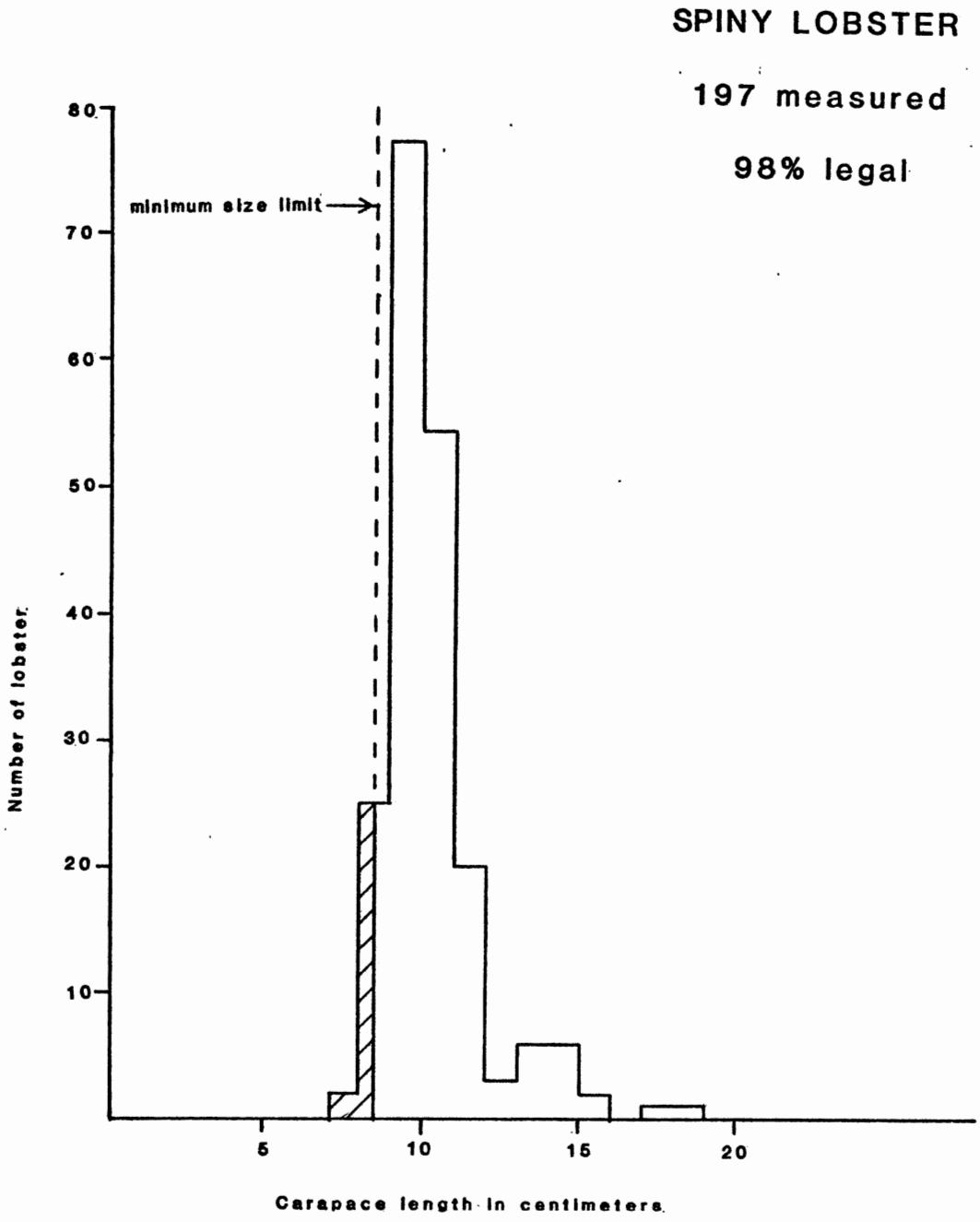

Figure 6. Length frequency of spiny lobster.

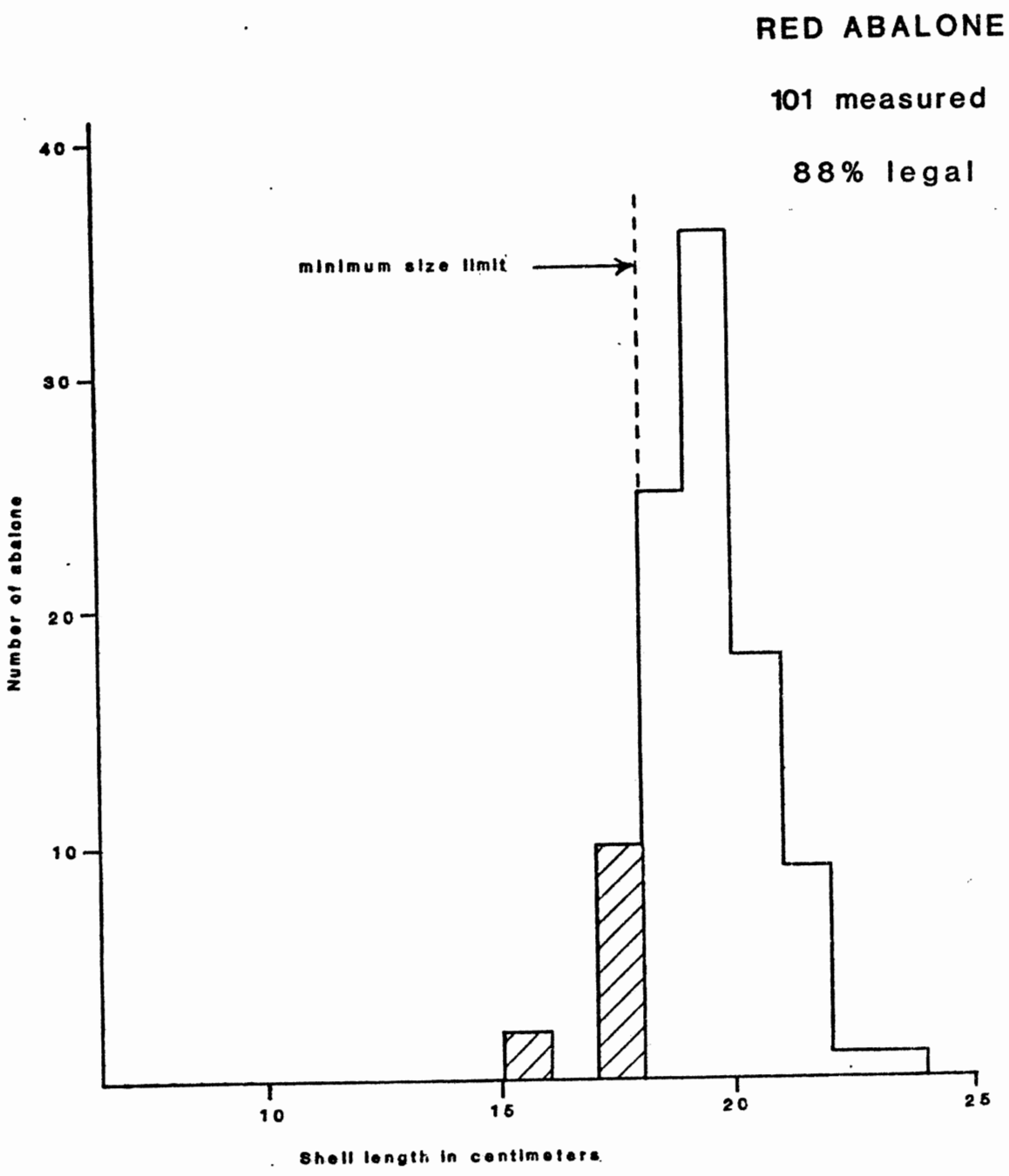

Figure 7. Length frequency of red abalone.